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*Article*

**Site-Specific Soundscape Designs for the Emergence of Sonic Architectures**

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**Abstract:**

Does a building contain its own voice? And if so, can that voice be discerned, transformed and enhanced by soundscape design? Barry Blesser discusses the reverberation and more specifically the eigentones of a space, resonant frequencies with extended lifetimes that provide architectural spaces with a characteristic acoustic quality related to its dimensions and materiality. But the sonic qualities of an architectural space extend beyond a consideration of acoustic characteristics. What of a space’s poetic properties, its own unique personality? Can soundscape design uncover such qualities of architectural spaces, and if so, can sonic architectures emerge through the recomposition and augmentation of existing sonic infrastructures? This paper describes two soundscape designs, *Revoicing the Striated Soundscape* and *Subterranean Voices*, that transformed existing sonic infrastructures for the realization of a building’s *Voice* through the recomposition of on-site sounds.

**Keywords:** soundscape design, sound studies, architecture, acoustics, design, sound-art, urban design, electroacoustic composition, installation, public art.

**1. Introduction**

The soundscape design methodology presented in this paper seeks the transformation of sonic infrastructures for the emergence of the *Voices* of buildings. Sonic architectures are considered soundscapes arising from the intentional design of existing sonic infrastructures within architectural spaces, and the phenomenological encounters of building inhabitants with these emergent *Voices*. The paper begins with a description of understandings of sonic architectures that have emerged in compositional, sonic-philosophy and design fields. It then describes a methodology by which the augmentation of sonic architectures is realized, and describes two site-specific soundscape installations that created sonic architectures. The first, *Revoicing the Striated Soundscape*, is a soundscape installation in an outdoor public space comprising readymade air-conditioners for the recomposition of the immediate soundscape. The second describes an iterative soundscape installation-performance, *Subterranean Voices*, which recomposes the soundscape of an underground chamber. The proposed soundscape design methodology eschews methods that seek to musically program sonic architectures, in particular Muzak and Ambient, instead creating sonic architectures that arise within the immediacy of a building’s sonic infrastructure. The methodology achieves this with the implementation of electroacoustic playback systems within localized spaces of buildings, which afford phenomenological listening experiences that can extend by anamnesis [1] throughout a building’s entire sonic architecture.

**2. Approaches to the Production of Sonic Architectures**

The following discussion is not intended to be an exhaustive explanation of historical relations between soundscapes and architecture, or of music created for buildings. Rather, the discussed compositions, concepts, artworks and designs are explored in relation to their influence on the paper’s proposed methodology for the soundscape design of sonic architectures. A number of references are provided that will allow the reader to explore these relationships further if they wish.

*2.1. The Philips Pavilion*

An iconic intertwining of architecture and composition was the 1950s Philips Pavilion in which Le Corbusier, Iannis Xenakis and Edgard Varese contributed to the Pavilion’s external form and internal soundscape [2]. The Pavilion was a hybrid of architecture manifested from composition, and composition for architecture: Xenakis reworked his composition Metastaesis to materialize the parabolic forms of the building’s external structure, and Le Corbusier designed the internals of the building including an array of 300 speakers for which Edgard Varese composed his piece Poeme Electronique. Although relationships between composition and buildings predate this event [3], the actual consideration of sound as sonic architecture was foregrounded in the manifestation of the external and internal spaces of the Philips Pavilion, and as such can be considered an initiating example of sonic architecture.

*2.2. The Art of Noises*

In the 1910s, the Futurist Russolo joined in the celebration of Modernity through his Manifesto *The Art of Noises* in which the sounds of the industrial were elevated to a new sonic category – noise-sounds. Russolo invented his noise machines [4], which mimicked the sounds of the urban and were composed into musical pieces for concert halls. By reifying the sounds of Modernity, Russolo endowed them with compositional purpose and artistic consequence. The industrial infrastructures of the day inspired the concert sounds performed by Russolo, who with his noise-machines, perhaps unintentionally, was capturing and recomposing the architectural sounds of his contemporary city. His work opened the field of composition towards a consideration of all sounds, be they sourced from designed instruments, natural environments or the acoustic outpourings of the urban, as containing musical significance.

*2.3. Soundscapes of Control*

Late 20th century music composed specifically for urban spaces, manifested from artistic and programmatic intentions, became established respectively as Ambient music and Muzak. Whether these soundscapes can be considered sonic architectures is questionable: both soundscape forms are transposable across typologies, and as such are an imposition *upon* rather than a manifestation *within* space. For example, Brian Eno composed his minimalist piece *Music for Airports* (note airports, not a specific airport) to provide a sonic ambience for people waiting in airports. While the artistic and aesthetic intent of Eno’s Ambient composition is clear, it is nevertheless compatible with the intentions of Muzak, which intentionally programs space for the purpose of conditioning human behavior [5]. Eno hoped to differentiate his Ambient music from Muzak: “whereas their intention is to “brighten” the environment by adding stimulus to it, Ambient Music is intended to induce calm and a space to think” [6]; however, Eno’s *Music for Airports*, if played in every airport, would quickly take on the homogenizing form ascribed to Muzak. And it is equally conceivable that the Muzak Corporation could easily absorb Ambient music as a type of spatial soporific to shape human behaviour. In fact, the Muzak Corporation’s website confirms this: under the headings Instrumental-Tranquility is music strikingly similar to Ambient Music [7]. Ambient music, like Muzak, imparts programming within soundscapes, and therefore, is unable to respond to the inherent sonic architecture, or *Voice*, of buildings.

*2.4. Listener-Centered Sound Spaces*

Pierre Schaffer’s *sound object* affords phenomenological perceptions of sound, rather than sound being reduced to representation; that is, sound is understood as *acousmatic* rather than *acoustic* in considering “the perceptive reality of sound [acousmatic], as distinguished from the modes of its production and transmission [acoustic]” [8]. The sound research institute CRESSON extends Schaffer’s theory by defining the *sound effect* in which the sounds of the city can be understood as a lexicon of sound effects that arise within the nexus of listener perception, the built environment and cultural context [9]. CRESSON’s sound effects generally avoid objective definitions of sound, and instead understand the city as a kind of instrumentarium in which the listener creates compositions related to their perceptions and movements within the built environment of the city they inhabit. For both Schaffer and CRESSON sounds do not contain absolute qualities, instead the creative capacity of listening and phenomenological perception is paramount. CRESSON also employs a structuralist interpretation of urban soundscapes: a linguistic metaphor is evoked which describes the soundscape as a book, the sound effect as a sentence and the sound object as word (or phoneme) [10]; thus, the sound object is described as the minimal unit of sound in a soundscape, with potential for both structuralist and phenomenological applications to soundscape design. As discussed below, the proposed methodology draws upon CRESSON’s structuralist approach in compositional considerations, and phenomenological encounters as contributing to the dissemination of a building’s *Voice*.

*2.5. Acoustic Space as Compositional Space*

A line of consistency can be traced between the earlier descriptions of Russolo’s considerations of noise-sounds, to Cage’s important work 4’ 33”, in which the spectacle of watching Cage (not) play his piano directs the audience’s listening outwards to the surrounding soundscape. Like Russolo, Cage considered all sounds as potential elements in a composition. Russolo’s and Cage’s efforts to attune our listening to the immediate soundscape further resonates with two important thinkers in the domain of sonic studies – Marshall McLuhan and Murray Schafer. McLuhan questions the visual dominance encountered in perceptions of space and brings attention to the depth of information and potential experience contained within the acoustics of a space, that is, in a listening-to-space [11]. Murray Schafer, inventor of the term soundscape [12], builds upon this insight when he suggests that the sounds of the world are a macro-composition unfolding around us ceaselessly; the everyday soundscape *is* a composition. These composers and thinkers evoke a sense that *all* space is sonically active, information-rich and full of compositional potential.

*2.6. Max Neuhaus and Site-Specific Sound*

Since the 1960s sound-artist Max Neuhaus has used site-specific sounds to transform architectural spaces by encouraging the public to develop listening relationships with the sounds of the everyday. His most famous work, *Times Square*, is located underground where a large speaker emanates “a deep resonating drone, like a ventilation hum or some mysterious mechanical object” [13], which encourages passers-by to engage with the immediate soundscape. Another work by Neuhaus, Documenta IX, which is installed inside a building, creates three interrelated localized acoustic zones in which building inhabitants perform space with their movements and aural awareness [14]. Neuhaus’ site-specific works are an initiating example of music leaving the programmed spaces of the concert hall to engage with public spaces. The methodology discussed in this paper strongly resonates with Neuhaus’ work, however, LaBelle’s insight that Nehaus’ projects “reveals that *inhabitation* is not solely spatial, but temporal and auditory” (my italics) [15] suggests a conceptual departure: the methodology proposed in this paper is a soundscape design approach emphasizing the act of discovering the *Voice* of a space, rather than being concerned with the experiences of a space’s inhabitants, which becomes consequential to the act of design.

*2.7. Buildings have Voices*

Barry Blesser considers architecture from an acoustics perspective in his paper, *An Interdisciplinary Synthesis of Reverberation Viewpoints* [16]. Of particular significance to the design of sonic architectures is his description of eigentones, reverberant frequencies with maximum decay times that provide a unique sound to a space; that is, the reverberation qualities of a space give that space a specific type of voice that speaks to the listener (should they care to listen). An awareness of the importance of reverberation in providing a space with its own unique quality is in contrast to early 20th century attitudes towards reverberation. There was an attempt to eliminate reverberation in the design of Modernist buildings due to its association with inefficiency; however, as explained by Emily Thompson, this silencing of architectural acoustics proved to be a fleeting flirtation of Modernity’s eagerness to exert control on the constructed environment [17]. Thompson goes on to discuss society’s realization that reverberation is an essential aspect of buildings: it seems the *Voices* of Buildings refuse to be silenced. It is fascinating that of all the practitioners referred to in this paper, it is the Acoustician, Blesser, that is suggestive of architecture as living space; if we can consider space as having a voice, can we not consider space as having a presence, essence or even a personality? It is here that the artistic domain reconfigures acoustic design: taking as its precedence techniques and ideas inherited from the practitioners described in the above sections of this paper, the discussed soundscape design methodology augments the soundscapes of buildings to make emergent the *Voices* of buildings.

**3. Towards a Soundscape Design Methodology**

The discussed methodology postulates an approach to soundscape design that creates sonic architectures that are the expression of the personality, or the *Voice*, of a building; as such, the methodology creates the conditions for the emergence of sonic architectures which exist as potential within the sonic infrastructures of architectural spaces. Before the methodology is discussed a description of the axioms that inform the methodology is required: differentiating incidental and intentional soundscapes, and the effects of striations and rhythms on the soundscapes of buildings.

*3.1. Differentiating Incidental and Intentional Soundscapes*

In the context of this paper *intentional* soundscapes are the result of soundscape designs that construct sonic architectures, or the *Voices* of buildings, from existent sonic infrastructures. Sonic infrastructures are considered to be the by-products of the design and planning of the built environment; that is, sonic infrastructures are *incidental* soundscapes that contain the potential for the creation of sonic architectures through intentional soundscape design. To this day soundscape planning rarely goes beyond standards set by organisations such as the Environmental Planning Authority (EPA) that legislate minimum noise requirements to manage health and annoyance concerns, which diffuses a legislative rather than design intention throughout soundscapes. As has been explicitly described by a number of soundscape practitioners, most recently within Britain’s Positive Soundscape Project (PSP) [18], this focuses attention on the prevention of the negative impact of existent sound, rather than the positive impact intentionally designed soundscapes can have on listener perception and human health. More recently, the European Union has led the way in recognizing the importance of soundscape design for healthy communities [19] by developing an awareness of the importance of intentionally designed soundscapes.

With the exception of concert halls that are programmed for entertainment, and acoustically designed housing which prevents intrusions of external sounds into private abodes [20], the soundscapes of buildings may be defined as the aggregate of sound objects that form incidentally to the design and creation of buildings. The office space, for example, is programed to house office workers that require climate control, passage to and from their desks, and perhaps the piping of some derivative of Muzak for a more productive workforce, which results in a soundscape derived of muffled voices, musical tones, footsteps and humming ventilation outlets; hardly the result of intentional sonic design. The proposed act of soundscape design transforms a building’s incidental soundscape into sonic architectures of intent: the intention being to discover and augment the *Voice*, which exists as potential within the building’s sonic infrastructure. In the case studies below, I provide specific examples of the augmentation of incidental soundscapes by intentional soundscape design for the discovery of a building’s *Voice*.

*3.2. Striated Space and Rhythmic Space*

Two philosophical approaches to understanding the sounds of everyday life, *striated space* and *rhythmanalysis*, are integral to the described soundscape design methodology. Incidental soundscapes are considered a mixture of the striated and rhythmic qualities of a building’s soundscape, that when considered acousmatically (see section 2.4), or as an aggregate of sound objects, becomes the sonic material that holds the potential for the transformation of sonic infrastructures into sonic architectures.

The *striated soundscape*, a term invented by the author, is an application of Deleuze and Guattari’s concept of striated space. While I am not advocating a Deleuzian approach to understanding and designing sonic space [21] I believe this particular conceptual tool provides practical context for understanding the homogenizing effect of the hums of air-conditioners and ventilation outlets. The broadband, often low-frequency, output of climate control artifacts, perceptible in the spectrograms of urban sound recordings [22], provides fresh perspective when aligned to Deleuze and Guattari’s observation that “these parallel verticals have formed an independent dimension capable of spreading everywhere, of formalizing all the other dimensions, of striating all of space in all of its directions, so as to render it homogenous” [23]. The Acoustic Ecologist, Barry Truax, has certainly made clear what he thinks of the impact of these lo-fi broadband sounds on human consciousness: “The person’s attention is directed inward, and interaction with others is discouraged by the effort to “break through” that is required. Feelings of alienation can be the result” [24]. There is much to be said about the political ramifications of such descriptions of space [25], however, for the purposes of this paper, the *striated soundscape* is presented as a ubiquitous sonic presence both in and between buildings, where the proliferation of air-conditioners and ventilation outlets creates a homogenized voice; buildings everywhere are heard to hum the same tune at more-or-less the same frequency.

In contrast to the homogenous drones of buildings are the rhythms of a building’s soundscape. Lefebvre describes space as, “the bundle of natural rhythms wrap(t) in rhythms of social and mental function” [26]; the “natural” rhythms of a building, upon analysis, are the rhythms of social organisation to which buildings, like people, are subject. The social organisation of the working day, the lunch break, the chosen footwear of a building’s inhabitants, programmed PA announcements, and modes of social interaction add daily rhythms to a building’s soundscape that together with a building’s striating hums acts to establish the incidental soundscapes of buildings. Like striated space, discussions of rhythmic space have a political basis, as explored in detail by Lefebvre in his book *Rhythmanalysis* (refer to note 26), but for the purposes of this paper, rhythms, like striations, are considered to shape the incidental soundscapes of buildings. It is the *mixture* of the rhythmic and striated, understood as the aggregate of sound objects forming an incidental soundscape, which can be recomposed for the creation of sonic architectures. The rest of this paper concentrates on an intentional soundscape design methodology as a means to discover within this milieu of sound, the *Voice* of buildings.

**4. A Soundscape Methodology for the Augmentation of Sonic Architectures**

*4.1. The personality of space*

As Barry Blesser’s book title expresses, all spaces speak if we care to listen [27]: as related to a building’s materiality and spatial dimensions sound reverberates throughout space emphasizing certain frequencies over others. Blesser’s acoustic description obtains greater significance when aligned to philosophical reflections of space. McLuhan’s descriptions of *Acoustic Space* as being information rich – the space of imaginative encounter [28] – or Bachelard’s *Poetics of Space* where phenomenological considerations of the familiar emphasize the capacity of sensory and imaginative perceptions to poeticize space [29] evoke a sense of spaces that live. We enter old buildings and feel its history weigh upon us in intangible moments of awareness, perceptions augmented by the unexplained creaks and groans of ancient materials. As discussed, Emily Thompson alludes to the efforts of Modernity to silence these ancient worlds, and provide anesthetized spaces on which to etch Modernity’s dreams of efficiency; however, the desire to hear the aliveness of space was too much. And once again we return to Blesser’s maxim. It seems we desire spaces that speak, spaces that live. It is here the argument begins to tip into a type of pantheism, where buildings are considered to contain their own presence, essence, and personality with which the inhabitant engages. This is not simply a fantastical escape from the utilitarian construction of spaces; it is an acknowledgment of mystery. The post-humanist philosopher Serres writes “The real is not rational; it is improbable and miraculous … I find happiness in the divinity of things themselves; they push me toward pantheism” [30]; and Morton, who dismisses the concept of nature, instead suggests a type of pantheism in which an ecology of here and now, a collapsing of distance between I and other (human and non-human) is foregrounded [31]. A pantheistic perspective of sonic architectures suggests buildings, like its human inhabitants, are imbued with living essence: the act of intentional soundscape design is the augmentation of this essence into the emergence of *Voice*, which accordingly affects phenomenological transformation of the perceptions of a building’s human inhabitants.

*4.2. The challenges of speaker arrays*

An integral component of the proposed methodology is the installation of electroacoustic speaker arrays for artistic purposes. Speaker arrays are already part of the sonic infrastructure of many buildings; however, their intention is often programmatic, whether the speaker configurations contain music, announcements or alarms. The installation of electroacoustic speaker arrays for artistic means are not always a welcome addition, particularly if the system is perceived to interfere with the programmatic intention of the space in which it is introduced. A recent report by SIAL Sound Studios in Melbourne, Australia suggests that a number of multi-speaker soundscape systems in Melbourne have been unsuccessful due to negative public reactions [32]. The report does describe some successful soundscape systems in Melbourne, which are located in transitory spaces; however, soundscape systems that have been installed in popular public spaces, including Federation Square Atrium and Southbank Boulevard, which are heavily programmed for consumerism and entertainment, were considered an imposition on existing spatial programs leading to their eventual decommissioning.

Bjorn Hellstrom, a Swedish soundscape designer who utilizes speaker arrays in public spaces, has avoided this problem in two ways. Firstly, by installing soundscape systems that restore spaces degraded by adjacent noise sources (a welcome act particularly in Europe where the European Union legislates for healthy soundscapes) and secondly, ensuring emitted sounds are located within a defined listening locus [33]. As such, the speaker systems, rather than imposing upon spatial programs, integrate with existent conditions, and are therefore more likely to be welcomed by the public. The discussed methodology draws on Hellstrom’s approach in so far as sites are selected in which speaker placement results in minimal public agitation; specifically, a localized space of varying scale, within or around a building that contains minimal programming as social and/or commercial space, is selected. These spaces, often ignored or hidden, are more congenial to artistic transformations, if only for the reason that the public can easily avoid these spaces; however, the unusual experience of encountering transformed sonic architectures in a little known part of a building can cause the perceiver to disseminate, by anamnesis (refer to note 1), its transformational effects throughout a building’s entire soundscape.

*4.1. Composing with site-specific sounds*

A further integral aspect of the methodology is the recording and reintroduction of on-site sounds. This is a structural-linguistics exercise where the edited recordings of a building’s soundscape are potentiated as compositional sound objects for electroacoustic playback, and a phenomenological exercise in which sound objects are reconfigured for altered listening experiences. The linguistic metaphor is suggestive of CRESSON’s structural approach; as explained above, the soundscape is the book, the sound effect is the sentence, and the sound object is the word or the phoneme. The *Voice* of a building, when understood as an amalgam of irreducible utterances, the mixture of introduced and existent sound objects, can construct new sentences, and stories, when reintroduced into the building via speaker arrays at volumes equivalent to existent volume levels. It is in the chance encounters afforded by the mixture of re-introduced sound objects and existent sound objects that the building’s augmented *Voice* emerges. Using this method, spatial programming, typically manifested as fixed patterns of rhythms and striations, continuously unravel and reweave as new expressions. It is important to note that the building’s *Voice* is augmented with or without human encounter: the structural creation is for the speaking building in and of itself; however, interaction between the human inhabitant and the building’s augmented *Voice* affords altered phenomenological perceptions, which can be disseminated by anamnesis throughout the building. Thus, the localized sonic architecture that emerges through structural means spreads outward to the rest of the building via phenomenological encounter.

**5. Two Case-Studies for the Emergence of Sonic Architectures**

*5.1. Revoicing the Striated Soundscape*

The public sound installation *Revoicing the Striated Soundscape* was commissioned by the City of Melbourne Public Art Commission in 2012. The work, scaled to a narrow urban laneway, comprised four readymade air-conditioning units housing four speakers networked to a computer system, which randomly played eight distinct compositions looping at ninety-minute intervals [34]. Like many of Melbourne’s laneways the site is hidden between the rear edifices of buildings and is only occasionally utilized for deliveries and rubbish disposal. It is popular with graffiti artists, shop assistants on “smoko” and city inhabitants seeking a quick route to the train station, otherwise it is lacking as social space. On-site recordings, editing and studio recompositions of recorded sounds were completed over several months. Extended listening during recording and editing revealed a sonic ecology dominated by air-conditioning sounds, but also a diversity of other sounds including doors opening and closing, bins being moved and emptied, conversations of shop workers on break, and interruptions of external sounds, particularly traffic. Although this demonstrated the space had a complex pre-existing sonic infrastructure, the homogeneity of its rhythmic repetitiveness and ever-present striations suppressed the laneway’s capacity to express a distinct *Voice*.

The augmentation of existing conditions included heavy manipulation of on-site sounds using various software programs and the sounds’ reintroduction at volume levels sitting equivalently or just above background levels, which ensured visitors were hearing a balanced mix of existent sounds and introduced sounds. Conceptually, air-conditioning units were suggestive of orifices from which the *Voice* of the city emerged; this extended to the use of recorded human voices in the installation. This drew criticism from adjoining office dwellers disrupted by the unwelcome sounds of the human voice, unsurprising considering human sensitivity to this frequency range. The complaints helped define a strategic limitation now implicit to the methodology – exclusive use of on-site sounds. Indeed, the installation was at its most effective when playing back site-specific sounds with minimal transformation. Often the source of sounds – real or introduced – was ambiguous causing the listener to question the source of perceived sounds. This formed phenomenological listening conditions, and consequently, shifting perceptions of the laneway’s sonic environment. I spent considerable time at the installation site engaging in conversations with passers-by. In this time I discovered repeat visitors, some from nearby offices, who had their lunch on-site; generally driven by curiosity they would spend time in the laneway to encounter its varying sonic transformations which were afforded by the compositions’ randomized playback.

The striated and rhythmic manifestations of the incidental soundscape of the laneway were transformed by intentional soundscape design from which new *Voices* emerged, creating a unique sonic architecture that augmented typical laneway sounds into musical, compositional and imaginative listening experiences. The striations of the laneway caused by functioning air-conditioners were warped and tilted by the introduced synthesised air-conditioning sounds, altering these homogenous forms into perpetually transforming immersive spaces. The rhythms of the space were altered by the randomly cycling compositions combining with the typical rhythms of the day, including the sounds of the people who came to make this space a temporary place of escape from everyday activity. A further mode of transformation was the spatialisation of sounds that weaved a type of sonic room in which listeners felt immersed, as defined by the shifting perceivable locus of interweaving sound objects, real and introduced. It is difficult to say if the experience carried over into other parts of the city by anamnesis, but certainly the mundane experience of passing beneath air-conditioners was transformed into a unique experience if only by virtue of its unusualness, an experience that could have provoked anamnesis upon encountering, visually or auditorially, other air-conditioners scattered throughout the city.

*5.2. Subterranean Voices*

*Subterranean Voices* was a site-specific electroacoustic installation-performance commissioned by the Liquid Architecture 14th Annual Sound-Art Festival in 2013 [35]. The work was performed in a cavernous concrete cuboid called *The Trench* beneath Federation Square in Melbourne. Originally the space was built as a service area, but is now effectively an abandoned space with an automated (and incidental) soundscape. Exposed pipes stretch along its walls routinely carrying sewerage and grease waste, an empty elevator regularly makes journeys from above to below ground, and various striated buzzes and hums emerge and recede. Adding to the sonic eccentricity of the site is its location between two busy platforms of Melbourne’s central railway station, Flinders Street station. With only thin concrete walls separating The Trench and adjoining platforms the space is regularly filled with stationary and passing trains, and their overpowering horn blasts. *Subterranean Voices* is an example of how localizing sonic transformations within a part of a building can create sonic architectures without interrupting spatial programming, for while The Trench is heavily programmed in the sense of automation (gushes of liquids, journeys of an elevator, arrivals and departures of trains, all set to discernable rhythms) there is a complete absence of social space. The installation lasted for only one weekend, however during this time, *Subterranean Voices* offered a space of difference into which human inhabitants could experience a completely new sonic architecture, a hidden *Voice* of Federation Square.

Introduced sounds created a similar effect to the previously described installation, with ambiguous listening experiences resulting in phenomenological listening conditions. The installation was at its most effective when low-volume sounds were released from the speaker array to merge with equivalently low-volume sounds of gurgling pipes and distant platforms creating a dreamlike listening space; moments unexpectedly, though regularly, discombobulated by the remarkable dynamism of blasting horns and passing trains, both real and synthesized. Introduced sounds were given emphasis at frequency bands similar to the eigentones of The Trench, calculated in earlier tests, that produced exaggerated decay times particularly evident during moments of silence. The augmented *Voice* of the Trench was strangely inviting, in the sense of familiarity, with its evocation of the everyday; indeed, an arresting feature of the installation was that The Trench already had a *Voice* to be augmented– its regular rhythms of commuting trains and gurgling pipes imbued its human-devoid automations with a strange organicism. Upon speaking to audience members after the installation many recounted moments of silence, the strange almost alien nature of the space, its ambiguous mixture of introduced and site-specific sounds, and their meditative experiences of space. Indeed, I witnessed many people with their eyes closed well after the installation became silent, lost in a deep listening to the existing sonic conditions of space, immersed completely in the sonic architecture of The Trench.

Where *Revoicing the Striated Soundscape* suggested the benefits of transforming external spaces, *Subterranean Voices* extols the benefits of dedicating a space within a building to intentional soundscape design. The augmented building’s *Voice* is foregrounded in which the building’s inhabitants may immerse themselves for unique encounters with everyday occurrences. Regarding anamnesis, whenever I hear the sounds of a passing train, particularly its horn blasts and the hiss of releasing brakes, my mind is instantly transported to The Trench, presumably going about its business in the lonely darkness of the underground. Such experiences, also conveyed to me post-installation by other participants, suggests that phenomenological encounter with augmented sonic architectures can emerge unexpectedly within multiple locations of a city [36].

**6. Conclusions**

Much of the discussion surrounding Soundscape Design, as suggested by the works of CRESSON and Acoustic Ecology [37], and the public sound installations of Max Neuhaus and recent EU commissions (see note 19), is listener centered. The question is asked, what are the needs of listeners in relation to the built environment? But what if the soundscape designer, by developing a relationship that is sensitive to each building’s specific sonic attributes, was to engage exclusively with architectural spaces and ignore the needs of the people who inhabit those spaces? Blesser encourages us to listen to spaces speak; however, the methodology discussed here asks the soundscape designer to take a further conceptual and imaginative leap by engaging with a building’s pantheistic presence by uncovering its *Voice*. The emergence of buildings’ *Voices* reflects a desire to revitalize the everyday through the (re)discovery of mystery, which, as the philosopher Serres suggests, is inherent in all things. The methodology begins with attentive listening to realize a building’s sonic manifestations and gain an appreciation for a building’s sound objects (utterances), acoustic properties, and rhythmic and striated conditions. This becomes a poetic intertwining of soundscape designer and building, a synthesis that creates emergent sonic architectures that are uniquely suited to its accompanying built environment. It is contended in this paper that a building with a programmed soundscape is often at odds with a building’s dimensions, materiality and character: Muzak and Ambient music, in particular, enforces a spatial programming (to shape human behavior) which is transposable across typologies, that is, not created for a specific building. As such, Muzak and Ambient music can be ignored by soundscape designers who seek to discover the *Voices* of buildings; however, embedded sonic infrastructure such as ventilation outlets, PA systems, human activity and amenities should be integrated into the creative process of designing sonic architectures, as these are integral to a building’s existence. The extraction and reintroduction of site-specific sounds with electroacoustic speaker arrays realizes, by sonic transformation, the *Voice* of a building. The paper describes two sound installations, *Revoicing the Striated Soundscape* and *Subterranean Voices*, both of which transformed incidental soundscapes into intentional soundscapes for the augmentation of the *Voice* of buildings. Whether indoor, or outdoor spaces adjoining a building, these augmented spaces allow buildings to express their unique essence, while simultaneously affording phenomenological listening encounters that can disseminate listener experiences throughout the rest of the building and beyond. Specifically the methodology suggests the selection of a localized site within a building that is *not* social space, so the installation is at minimal risk of disturbing social programming; thus ensuring its longevity, while retaining its phenomenological listening conditions for human inhabitants. It is hoped that in time a living building speaking with its own *Voice* would become desirable by its human inhabitants, who themselves freed from social programming, would desire the *Voices* of buildings to emerge.

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**Conflicts of Interest**

The author declares no conflict of interest.

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36. The following radio program includes an interview that provides further descriptions of the work, *Subterranean Voices*: Acoustic Architecture. Narr. And Prod. Michael Shirrefs. *Into the Music*. ABC Radio National. 21 Sept. 2013. Radio. <[www.abc.net.au/radionational/programs/intothemusic/acoustic-architecture/4969332](http://www.abc.net.au/radionational/programs/intothemusic/acoustic-architecture/4969332)>.
37. Soundscape Design approaches discussed within the Acoustic Ecology movement include the comparative analysis of lo-fi and hi-fi soundscapes as discussed by Barry Truax (2001) in his book *Acoustic Communication*, and Murray Schafer’s (1993) argument in his book *Voices of Tyranny, Temples of* Silence that “the basis of all soundscape design ought to be the artful patterning of what is already there” (p. 103). Though not discussed explicitly in this paper both approaches have influenced the evolution of the discussed methodology.

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